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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/532,536	03/22/2000	Behrouz Farhang-Boroujeny	NUSING.002A	7771

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EXAMINER

LEE, CHI HO A

ART UNIT	PAPER NUMBER
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2663

DATE MAILED: 01/12/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/532,536

Applicant(s)

FARHANG-BOROUJENY ET AL.

Examiner

Andrew Lee

Art Unit

2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-30, 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Langberg et al U.S. Patent Number 6,421,377.

Re Claims 1, 21, and 41, fig. 3 teaches echo cancellation over asymmetric spectra wherein the Decimator 110 reduces the sampling rate of the filtered signals from first sampling rate to the second sampling (See col. 5, lines 58 +) and the Echo Estimator 180 estimates the echo signal based on the filter signal. Fig. 3 fails to explicitly teach "filtering the transmitted signal signals ...at least one-half of the predetermined data rate."

However, it is known to one skilled in the art that the Decimator 10 is a combination of a low-pass filter and a sample rate changer. In this case, the 110 Low-pass Decimator low-pass filters the transmit signal and changes the sampling rate to the second sampling rate. Furthermore, it is known that the low-pass filter allow signals to pass that are at frequencies above half the Nyquist rate in order to ensure that all information can be extracted and the inherent aliasing will not corrupt the original signal.

Hence, one skilled in the art would have been motivated to "filter the transmitted signal...at least one-half" of the first sampling rate (predetermined data rate) to ensure

Art Unit: 2663

that all information can be extracted and the inherent aliasing will not corrupt the original signal. Therefore, it would have been obvious to one ordinary skilled to have "filtering the transmitted signal signals ...at least one-half of the predetermined data rate" to be consistent with the known Nyquist theory.

Re Claims 2, 22, refer to Claim 1, wherein the second sampling rate is reduced to matched the data rate of receiver.

Re Claims 3, 23, refer to Claim 1, wherein fig. 3 further teaches the adder 130 disposed to subtract the output rate.

Re Claims 4, 12-14, 24 refer to Claim 1, wherein the Echo estimator 130 is adaptive via signal 138 feedback to remove frequency component causing the echo.

Re Claims 5, 15, 25, refer to Claim 1, wherein the transmitted signal is sampled at 2,208 Kilo-samples per second and the receive path includes a signal having 552 kilo-samples per second (See col. 3, lines 20-33) wherein the K is 4 and positive.

Re Claims 6, 8, 16, 18, 26, 28 refer to Claim 1, wherein the Decimator 110 is reducing the first sampling rate at 4 (K) :1 (J) wherein both K and J are positive and J is less than K.

Re Claims 7, 17, 27 refer to Claim 1, Nyquist Theory.

Re Claims 9, 19, 29, refer to Claim 1, wherein reducing the sampling rate at the Decimator 110 inherently reduces the filter tap weights at the Echo estimator 180.

Re Claims 10, 20, 30 refer Claim 1, wherein fig. 3 supports ADSL system.

Re Claims 11 and 42, refer to Claim 1, wherein when the transmitted signal is lower than the received signal, then the Decimator 110 increases the data rate for rate matching.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 31-36, and 38-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Langberg et al U.S. Patent Number 6,421,377.

Re Claim 31, fig. 3 teaches echo cancellation over asymmetric spectra comprising Decimator on the receive path (a first up-sampler) that increased the receive sampling rate to the first sampling rate at the transmitter; the Decimator 110 (a second up-sampler) that matches the sampling rate of the filtered signals from first sampling rate to the second sampling (See col. 5, lines 58 +) and the Echo Estimator 180 estimates the echo signal based on the filter signal.

Re Claims 32-34, refer to Claim 31, wherein the adder 130 removes or subtracts the frequency component from the estimated echo signal wherein the Echo estimator 130 is adaptive via feedback signal 138 to remove frequency component causing the echo.

Art Unit: 2663

Re Claim 35, refer to Claim 31, wherein the transmitted signal is sampled at 2,208 Kilo-samples per second and the receive path includes a signal having 552 kilo-samples per second (See col. 3, lines 20-33) wherein the K is 4 and positive.

Re Claims 36, 38 to Claim 31, wherein the Decimator 110 is reducing the first sampling rate at 4 (K) : 1 (J) wherein both K and J are positive and J is less than K.

Re Claim 39, refer to Claim 31, wherein reducing the sampling rate at the Decimator 110 inherently reduces the filter tap weights at the Echo estimator 180.

Re Claim 40 refer Claim 31, wherein fig. 3 supports ADSL system.

5. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Langberg et al U.S. Patent Number 6,421,377.

Re Claim 37, fig. 3 teaches echo cancellation over asymmetric spectra wherein the Decimator 110 reduces the sampling rate of the filtered signals from first sampling rate to the second sampling (See col. 5, lines 58 +) and the Echo Estimator 180 estimates the echo signal based on the filter signal. Fig. 3 fails to explicitly teach "filtering the transmitted signal signals ...at least one-half of the predetermined data rate."

However, it is known to one skilled in the art that the Decimator 10 is a combination of a low-pass filter and a sample rate changer. In this case, the 110 Low-pass Decimator low-pass filters the transmit signal and changes the sampling rate to the second sampling rate. Furthermore, it is known that the low-pass filter allow signals to

Art Unit: 2663

pass that are at frequencies above half the Nyquist rate in order to ensure that all information can be extracted and the inherent aliasing will not corrupt the original signal.

Hence, one skilled in the art would have been motivated to "filter the transmitted signal...at least one-half" of the first sampling rate (predetermined data rate) to ensure that all information can be extracted and the inherent aliasing will not corrupt the original signal. Therefore, it would have been obvious to one ordinary skilled to have "filtering the transmitted signal signals ...at least one-half of the predetermined data rate" to be consistent with the known Nyquist theory.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Lee whose telephone number is 703-305-1500. The examiner can normally be reached on Monday to Friday from 8:30AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 703-308-5340. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

ANDY LEE
PATENT EXAMINER
A
1/7/04